

Alternate Position, Navigation, and Timing (APNT)

An Airline View

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APNT – Airline Perspective

- Cost vs. Capability
 - This is the number 1 driver!
- Navigation and Surveillance back-ups must be considered together
- Maximum reuse of current equipment – most desirable
- New equipment – not out of the question, but must pass the cost vs. capability evaluation
- Retrofit versus new aircraft equipage – APNT must have a retrofit solution (in some form)

Navigation Technologies

- GNSS – Not just GPS!
 - GPS
 - GLONASS
 - GALILEO
 - COMPASS
 - How do we certify these systems?
 - Can the synergy of these systems deliver a partial APNT capability?
- APNT solution needs to be considered with tightly coupled Inertial Reference Units (IRU)
 - Most air transport category aircraft will continue to be equipped with IRUs

Surveillance Technologies

- Wide Area Multilateration
 - A good solution for surveillance back-up, but uplink of navigation information to aircraft could be problematic
 - Would need to be integrated into the aircraft navigation system
- Aircraft based surveillance systems
 - ADS-B In
 - Accuracy tied to navigation source
 - Can be degraded by GPS interference
 - TCAS
 - Excellent, independent range between aircraft
 - Will need changes to be compatible with Next Gen operations

Conclusions

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